

receiving, by at least one module processor, the at least one controller command from the controller;
 generating, by the at least one module processor, at least one module command based on the at least one controller command, the at least one module command being addressed to at least one module;
 receiving, by the at least one module, the at least one module command;
 generating, by the at least one module, a plurality of valve commands based on the at least one module command, the plurality of valve commands governing fluid flow through a plurality of valves of the at least one module, the at least one fluid valve controlling pressure applied to the flexible sheet via outlet ports; and
 decellularizing the donor tissue using the fluid flow metered based on the at least one controller command.

8. The method as in claim 7 wherein the at least one cassette comprises a pneumatically controlled cassette.

9. The method as in claim 7 wherein at least one of the at least one cassette comprises a disposable cassette.

10. The method as in claim 1 further comprising:
 iteratively decellularizing and recellularizing the donor tissue until the transplantable tissue is generated.

11. The method as in claim 10 further comprising:
 applying a first protocol to the decellularizing; and
 applying a second protocol to recellularizing.

12. The method as in claim 10 further comprising:
 introducing the donor tissue to at least one agent for a pre-selected amount of time; and
 introducing a cell culture to the donor tissue.

13. The method as in claim 10 wherein decellularizing the donor tissue comprises:
 configuring at least one valve in a fluid path according to a recipe;
 continually adjusting the fluid path by manipulating the at least one valve based on the recipe;
 pumping water through the continually-adjusted fluid path past at least one of the at least one valve to a mix cassette, the amount of the water being based on the recipe;
 pumping at least one solution through the continually-adjusted fluid path past at least one of the at least one valve to the mix cassette, the amount of the at least one solution being based on the recipe;
 mixing the water and the at least one solution in the mix cassette to form a medium, the amount of the mixing being based on the recipe;
 pumping the medium through the continually-adjusted fluid path to a reservoir based on the recipe;
 pumping the medium through the continually-adjusted fluid path from the reservoir to a bioreactor based on the recipe, the medium becoming a used medium in the bioreactor; and

pumping the used medium through the continually-adjusted fluid path from the bioreactor to a drain based on the recipe.

14. A method for engineering a tissue comprising:
 covering at least one pumping chamber and at least one fluid valve of at least one cassette with a flexible sheet;
 housing the tissue in a bioreactor, the bioreactor being in fluid communication with the at least one cassette;
 receiving, by at least one module processor, at least one controller command from a controller;
 generating, by the at least one module processor, at least one module command based on the controller command, the at least one module command being addressed to at least one module;
 receiving, by the at least one module, the at least one module command;
 generating, by the at least one module, a plurality of valve commands based on the at least one module command, the plurality of valve commands governing fluid flow through a plurality of valves of the at least one module, the at least one fluid valve controlling pressure applied to the flexible sheet via the outlet ports;
 decellularizing the tissue using the fluid flow metered based on the at least one controller command; and
 recellularizing the decellularized tissue.

15. The method as in claim 14 wherein the plurality of pumping cassettes comprise pneumatically controlled cassettes.

16. The method as in claim 14 wherein at least one of mixing cassette and the plurality of pumping cassettes comprise disposable cassettes.

17. The method as in claim 14 wherein the water comprises deionized water.

18. The method as in claim 14 further comprising:

filtering the water;

deaerating the water; and

if the amount of the water exceeds a pre-selected threshold, storing at least part of the water.

19. The method as in claim 14 wherein the at least one solution is concentrated.

20. A method for generating a tissue for transplant comprising:

iteratively decellularizing and recellularizing a biological specimen until the tissue is generated.

21. The method as in claim 20 further comprising:

applying a first protocol to the decellularizing; and

applying a second protocol to recellularizing.

22. The method as in claim 20 further comprising:

introducing the biological specimen to at least one agent for a pre-selected amount of time; and

introducing a cell culture to the biological specimen.

* * * * *